

To the extent any petition for an extension of time is required for timely submission and consideration of this Response, Applicants request that the Office treat this paper as including a petition for an extension of time of the appropriate length. Any extension fee incurred in connection with this submission may be charged to Deposit Account No. 13-0017 in the name of McAndrews, Held & Malloy, Ltd.

REMARKS

Claims 1-34 remain pending in the present application. Claims 1-5, 12, 14, 22-25, and 28 stand finally rejected under 35 U.S.C. §102(e) for anticipation by Tillmetz et al. U.S. Patent No. 6,410,175. Claims 6-9, 13, 20, 21, 26, 27 and 29 stand finally rejected under 35 U.S.C. §103(a) for obviousness in view of Tillmetz. Claim 11 stands finally rejected under 35 U.S.C. §103(a) for obviousness in view of the combination of Tillmetz with Narayanan et al. U.S. Patent No. 6,299,744. Claims 15, 30, 31 and 34 stand finally rejected under 35 U.S.C. §103(a) for obviousness in view of the combination of Tillmetz with Prakash et al. U.S. Patent No. 6,444,343. Claims 10, 16-19, 32 and 33 stand objected to as being dependent on a rejected base claim, but were indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants appreciated the opportunity afforded by Examiner Yuan to their undersigned counsel to discuss the application by telephone on October 27, 2003. During that telephone discussion, the undersigned counsel reiterated the applicants' position, set forth in their May 27, 2003 after-final Amendment, that Tillmetz, the principal reference on which all of the final rejections were based, does not, and cannot, qualify as a prior art reference against the present application. In this regard, the present application claims priority benefits from German Patent Application No. 19807876.5, which has an effective filing date of February 25, 1998. The effective date of the Tillmetz patent, for prior art purposes, is its filing date of November 12, 1998.

In the July 24, 2003 Office Action, made final, applicants' claim of priority benefits from the German application was denied because, according to the Office Action, the applicants had not filed the requisite certified copy of the priority application required by 35 U.S.C. 119(b). (See July 24, 2003 Office Action at page 6). In their after-final response, applicants submitted a certified copy of German Application No. 19807876.5. An English translation of the German priority application was submitted on September 24, 2003.

In the October 15, 2003 Advisory Action, the final rejections of claims 1-9, 11-14 and 20-29 in view of Tillmetz were maintained because, according to the Advisory Action, the foreign priority document (German Application No. 19807876.5) failed to provide support for the claim limitation "fuel stream comprising dimethyl ether" recited in independent claims 1 and 22. The Advisory Action stated, "Instead, the German priority document only teaches the use of liquid methanol or di- or trimethoxymethane as the fuel." (Advisory Action at page 2).

Applicants submit that the Advisory Action overlooked a portion of the disclosure of the German priority application here. Specifically, the German priority application does in fact disclose the use of dimethyl ether as a fuel:

The fuel cell system shown in the figure comprises a fuel cell 10, consisting of an anode chamber 12 and a cathode chamber 14, separated by a proton conducting membrane 16. A liquid coolant/fuel mixture is supplied to the anode chamber 12 by an anode feed line 18. All substances which can be oxidized chemically and have the general structural formula $H-[CH_2O]_n-Y$, with $1 \leq n \leq 5$ and $Y=H$ or $Y=CH_3$, can be used as fuel. The fuel cell system in the illustrated design example is operated with liquid methanol as fuel

and water as coolant. Even though only the use of water/methanol mixture will be described in the following, the extent of protection of this application should not be limited to this design example. Especially fluids or ionic or non-ionic water additives with favorable antifreeze properties can be considered as coolants. Possible fuels are e.g. branched variants of the above general formula, such as, for example, di- or trimethoxymethane.

(English translation of German Application No. 19807876.5 at pages 3-4 (emphasis added)). Although the above-quoted paragraph specifically names methanol and di- and trimethoxymethane as examples of suitable oxidizable fuels, the paragraph also provides a structural formula that encompasses additional fuels, including dimethyl ether.

The structural formula has two variables: n and Y . There are specified possibilities for n and Y . The following table show the possible compounds specified by the formula:

n	Y	compound
n=1	Y=H	CH ₃ OH
n=1	Y=CH ₃	CH ₃ OCH ₃
n=2	Y=H	CH ₃ OCH ₂ OH
n=2	Y=CH ₃	CH ₃ OCH ₂ OCH ₃
n=3	Y=H	CH ₃ OCH ₂ OCH ₂ OH
n=3	Y=CH ₃	CH ₃ OCH ₂ OCH ₂ OCH ₃
n=4	Y=H	CH ₃ OCH ₂ OCH ₂ OCH ₂ OH
n=4	Y=CH ₃	CH ₃ OCH ₂ OCH ₂ OCH ₂ OCH ₃
n=5	Y=H	CH ₃ OCH ₂ OCH ₂ OCH ₂ OCH ₂ OH
n=5	Y=CH ₃	CH ₃ OCH ₂ OCH ₂ OCH ₂ OCH ₂ OCH ₃

That structural formula, $H-[CH_2O-]_n-Y$, corresponds to dimethyl ether (CH_3OCH_3) when $n=1$ and $Y=CH_3$, thereby providing explicit written support for the dimethyl ether limitation recited in the applicants' claims.

The Manual of Patent Examination Procedure states that a structural chemical formula provides the written description for a claim drawn to a single embodiment or species. See MPEP §2163, pages 2100-2167 (8th edition, first revision, February 2003). In discussing the examination of claims drawn to a single embodiment or species, the MPEP states:

(B) If the application does not describe an actual reduction to practice, determine whether the invention is complete as evidenced by a reduction to drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole.

Id.

The U.S. Court of Appeals for the Federal Circuit has also ruled that a structural formula can itself provide adequate written support for a claim limitation. In *Singh v. Brake*, 317 F.3d 1334, 65 USPQ2d 1641 (Fed. Cir. 2003; copy transmitted herewith), the Federal Circuit held that the formula in Brake's priority document $((R)_r(GAXYCX)_n\text{-Gene*})_v$, where n is 0 or 1 to 4), provided a sufficient written description for a claim where $n = 0$. *Singh*, 317 F.3d at 1343 and n.5, 65 USPQ2d at 1647, note 5, and 1648. The court found that the formula only permitted 17 permutations of the GAXYCX sequence, not 9000+ as Singh had argued, and agreed with Brake that there were only two meaningful embodiments (when N is 1 to 4 and when N is 0). *Singh*, 317 F.3d at 1344, 65 USPQ2d at 1648. The Court also found that claim 5 of the priority application "discloses that N is 0 or 1 to 4, which is a clear 'blaze mark' providing in *ipsis*

verba support for 'N = 0' in the count." *Singh*, 317 F.3d at 1344, 65 USPQ2d at 1649.

Similarly, the applicants' German priority application sets out the structural formula $H-[CH_2O]_n-Y$, which corresponds to dimethyl ether when $n=1$ and $Y=CH_3$. This disclosure constitutes more than adequate support, if not in *ipsis verba* support, for the dimethyl ether limitation of the applicants' claims.

* * * * *

In view of the foregoing remarks, applicants submit that claims 1-9, 11-15, 20-31 and 34 are allowable, as well as claim 8, already indicated as being allowable, in addition to claims 10, 16-19 and 32-33 already indicated as being allowable. Applicants also submit that the present remarks should be entered because they do not raise any new issues requiring further searching and/or consideration and, in any event, will place the present application in better condition for appeal, if necessary. The Examiner is invited to telephone the applicants' undersigned attorney at (312) 775-8202 if any unresolved matters remain.

Please charge any fees incurred in connection with this
submission to Deposit Account No. 13-0017 in the name of
McAndrews, Held & Malloy, Ltd.

Respectfully submitted,



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